REMARKS

The Restriction Requirement

Applicants elect to prosecute the claims of Group II as styled by the Examiner (i.e., claims 27 - 32), without traverse, and ask that the Examiner withdraw claims 1 - 26 without prejudice.

Addition of Claims

Claims 33 - 39 have been added. These claims are equivalent to claims 3, 4, 6, 7, 9, 12 and 13 except they have been styled as method claims to properly depend, directly or indirectly from claim 27. The total number of claims now pending does not exceed the original number for which a filing fee has been paid, and thus no additional fees are required. These claims are supported by the application as filed and present no new matter.

Claims 27 - 39 remain pending as a result of the foregoing Amendment.

The Objection to the Disclosure

Applicant appreciates the Examiner's careful attention to the informalities in the present application. The specification has been amended to make editorial amendments to the application in view of the Examiner's helpful comments.

The Rejection Under 35 U.S.C. Section 112, Second Paragraph

The Examiner has rejected claims 2,15, 21- 22 and 28 under 35 U.S.C. section 112, second paragraph has been indefinite for failing to particularly point out a distinctly claim the

subject matter which applicant regards as invention. Applicant appreciates the Examiner's position.

The rejection of claims 1 - 26 is rendered moot by the withdrawal of such claims from consideration.

Claim 28 has been amended to make appropriate reference to "butyrate resins" as is clearly intended by reference to a group of resins in portions of both the specification and claims referring to same.

Applicant respectfully submits that claims 27-39 are now in compliance with 35 U. S. C. § 112 second paragraph.

The Rejection Under 35 U.S.C. Section 103

The Examiner has rejected claims 1-7, 10-16,18-23 and 25-26 under 35 U.S.C. section 102 (b) has allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the teachings of the Masuzaki et al. reference.

The rejection of claims 1-7, 10-16,18-23 and 25-26 is rendered moot by the withdrawal of such claims from consideration.

In this regard however, the Examiner has taken to position that the Mazusaki et al. reference disclose is an aerosol adhesive composition composed of an adhesive resin (any to include PVC, elastomers such as ABS, acrylics, etc.), a solvent (e.g. MEK, MeOH, etc.) and a propellant (e.g. DME, etc.) (the Examiner citing the abstract, column 1, lines 17-18 and 56-63, column 2, lines 12-16 and 51-57, and column 3, lines 25-26). The Examiner has also stated that "[a]ny differences which might possibly/conceivably exist between this envisioned, claimed

invention and teachings of this reference an (sic) held/seen NOT to constitute patentable differences, all of the compositional limitations of these claims being held/see (sic) to be satisfied by this reference" (emphasis added).

The Examiner has also rejected claims 8-9,17, 19-20, 24 and 26 under 35 U.S.C. 103(a) over the teaching of the Mazusaki et al. reference in view of the teaching of the Smrt et al. reference. The Examiner has taken position that the Smrt et al. reference disclose that it is known to incorporate a suspending agent (e.g. silica) in aerosol compositions of the type similar to those of Mazusaki et al. (citing the abstract, column 2, lines 41-52, column 3, lines 22-48, column 4, lines 2-5 and 64-67, column 5, lines 11-30 and N.B., lines 2-25). The Examiner concludes that would then obvious to one of ordinary skill in the art to incorporate such a conventional ingredient/component with the composition of the Mazusaki et al. reference.

The rejection of claims 8-9,17, 19-20, 24 and 26 is rendered moot by the withdrawal of such claims from consideration.

The Examiner has rejected claims 27-29 and 31-32 under 35 U.S.C. 103(a) as being unpatentable over what are alleged to be Applicant's admission of what constitutes prior art, or the King reference or the Meyers reference, each in view of the Mazusaki et al. reference. In this regard, the Examiner has pointed to an alleged prior admission (N.B. page 1, lines 14-27 of Applicant's specification), the King reference (column 1, line 45 through column 2,12) and the Meyers reference (the Abstract, column 1, lines 47-49 and 55-68, column to, lines 1-5, column 4, lines 11-16), all of which are alleged to disclose and/or establish that it is known to join plastic pipe sections/component utilizing an SWC. The Examiner concludes that it would have been

obvious to one of ordinary skill in the relevant part to employ the adhesive composition of Mazusaki et al. in any of the three cited joining processes, in place of the corresponding, allegedly analogous adhesive employed therein. The Examiner opined that this represents only the mere substitution of one known adhesive/SWC for another.

The Examiner has also rejected claims 30 and 32 under 35 U.S.C. 103(a) has been unpatentable over any of the alleged admissions prior art, the King reference or the Meyers reference, each in view of the Mazusaki et al. and Smrt et al. references.

Applicant respectfully submits that the invention of claims 27 - 32 would not have been obvious to one of ordinary skill in the art in view of the cited prior art references.

With respect to the alleged admission of prior art, Applicant respectfully points out that the present invention is an improved method of joining plastic pipe, and one that fills a long-felt need, provides unexpected results and has been readily accepted by the trade.

Turning first to the alleged admission of prior art, in the past it has been known only to adjoin lengths of plastic pipe using a liquid SWC. In order to provide the best bond possible, operators typically cleaned the sections of pipe to be joined with an organic solvent prior to the application of the SWC liquid compound. Lengths of plastic pipe have been adjoined in this manner for decades.

The cited portion of Applicant's specification teaches only that lengths of pipe have been attached using liquid SWCs, and points out the many problems of environmental contamination, product contamination and waste, associated loss of time and productivity, and lack of

uniformity in application. Accordingly, Applicant respectfully submits that his specification teaches nothing more than the prior use of liquid SWCs and the problems associated therewith.

The King reference relates only to liquid SWCs. This is borne out, for instance, in its background, which even mentions that such solvent cements have certain resin content to meet minimum viscosity requirements. See column 1, lines 62 through column 2, line 2. The King reference also teaches the use of thixotropic agents and inert metal salts to increase viscosity in preferred embodiments. See column 4, lines 5-19.

The Meyers reference mentions simply in background the use of SWC liquids without further detail. In fact, the Meyers reference is directed to solving problems associated with the attachment of corrugated pipe to PVC pipe, and mentions that normal methods using known SWCs are not practical for this purpose. Accordingly, the Meyers reference in its background teaches no more than the King reference in teaching that prior art methods utilized SWC dispensed in non-aerosol form for the purpose of adhering lengths of plastic pipe.

The Meyers reference relates to a method for connecting pipe using an arrangement such as shown in its Figures 4 and 5. Figure 4 is an enlarged side view shown in partial cross section of a flexible pipe connector with the male end inserted into the female end of a hard plastic pipe. Figure 5 is an enlarged cross sectional view of the cylindrical wall of the flexible pipe connector and the pipe wall of the hard plastic pipe. The male end 14 of the flexible pipe connector 10 is shown inserted into the female end 20 in Figure 4. Figure 5 is an enlarged cross sectional view of the interface 44 of the connector male end 14 and hard plastic pipe female end 20, the latter being referred to as a "bell" end. As shown in Figure 5, once the connector male end 14 is inserted into

the pipe female end 20, the liquified layer 40 resolidifies into the solid layer 42 but only after molten pipe material has flowed into the concentric grooves 30 of the male end 14. This resolidified layer 42 engages the plurality of concentric grooves 30 so as to prevent the male and female ends 14 and 20 from moving relative to one another along their common longitudinal axis, i.e., from being pulled apart. The interface 44 of the solid layer 42 and the concentric grooves 30 also prevents fluids from entering the interface 44, a watertight seal is created therebetween. In this manner, the receiving means of the male end 14 are now lockably engaged with the solid layer 42 of the pipe's female end 20 so that the flexible pipe connector 10 and the pipe 20 are sealably secured together.

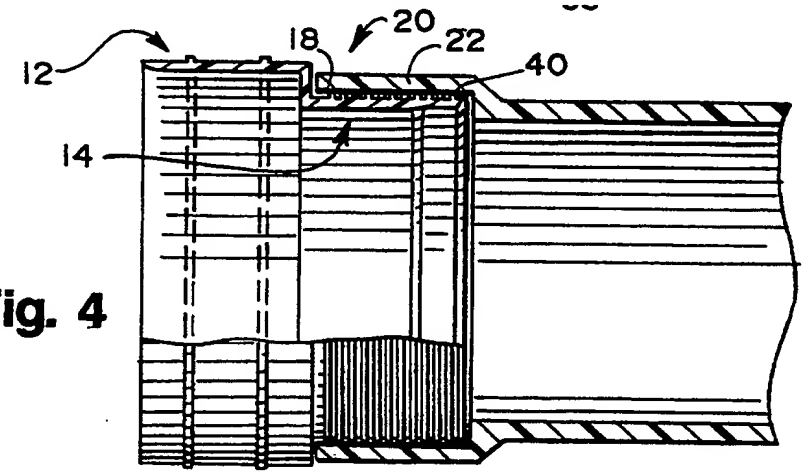

Fig. 4

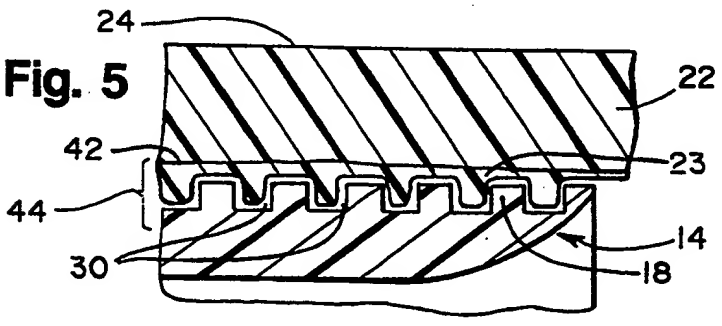

Fig. 5

The invention of the Meyers reference relies upon the liquification of one of the contacting surfaces which causes the melted layer (i.e. 40) to resolidify in a reconfigured solid layer 42 as shown in Figure 5. The Meyers reference teaches only that "any solvent weld glue *known in the art and commonly used*, such as plumber's solvent weld glue, for example" can be used as the melting agent. See column 4, lines 11-13. (emphasis added).

Accordingly, the only affirmative teaching of the Meyers reference is that SWCs *then known in the art and commonly used* might be used to form the joint between two pipe sections. The disclosure of the Meyers reference with respect to its invention only *reinforces* the use of a liquid, non-aerosol SWC, such as those then known in the art and commonly used. Furthermore, the Meyers reference clearly contains no teaching recognizing any criticality of the physical form of the solvent weld cement other than it be a liquid, and preferably a thick or positively thickened liquid.

The Examiner has combined either of the above-discussed prior art references with the teaching of the Masuzaki et al. reference to arrive at the method of the claimed invention.

Preliminary, Applicant notes that the Masuzaki et al. reference was first published on May 13, 1993, subsequent to be filing date of the Meyers reference (July 14, 1992). Accordingly, the Meyers reference could not have been referring to the disclosure of the Masuzaki et al. reference when referring to SWCs *known in the art and commonly used.* Accordingly, Applicant respectfully submits that the Meyers reference refers only to the use of liquid SWCs when referring to solvent weld cements commonly used in the art.

Be that as it may, the cited Masuzaki et al. reference simply bears not the faintest relationship to the joining of plastic pipe. Rather, the Masuzaki et al. reference is directed to solving problems associated with confirming the application of aerosol adhesives, and the weight of the application, by providing a color which fades upon drying so as not to show color following adhesion. A careful review of the Masuzaki et al. reference reveals that the only specific substrates mentioned are paper (ostensibly itself attached to paper or some other unspecified substrate; see column 3, lines 5-11), and the attachment of sheet steel to canvas (see column 3, lines 44-49). The Masuzaki et al. reference does not mention plastic, and mentions only substrates that are naturally in either rigid or flexible planar form. Accordingly, there is no suggestion that the compositions disclosed in the Masuzaki et al. reference the used as a solvent weld cement to join plastic, as is specified in claim 27, particularly referencing solvent weld action in lines 16-17. Rather, the Masuzaki et al. reference teaches only the use of its compositions as classic adhesives to be used to join materials that are either non-plastic or dissimilar, or both, inconsistent with, or at the very least irrelevant to, the joining of plastic pipe by solvent weld action. Furthermore and in this same regard, the compositions and methods of the Masuzaki et al. reference relate only to the methods using compositions as common adhesives to join non-sovent-weldable materials, and not to methods using compositions as solvent weld cements.

The content and context of the Masuzaki et al. reference -- if any can be determined at all -- is directed to the use of light duty adhesives in the fields of art, photography, and similar fields where visual presentation is important.

Accordingly, the cited Masuzaki et al. reference has no relevance to the problems sought to be solved by the method of the present invention, and Applicant respectfully submits that, at the time the present invention was made, one of ordinary skill would not naturally have looked to the Masuzaki et al. reference to solve problems associated with the solvent-welding of plastic pipe, absent the hindsight obtained from the present disclosure.

It is well known patent law that to properly combine two references for a rejection under 35 U.S.C. 103 to reach a conclusion of obviousness, there *must* be some teaching, suggestion or motivation which would lead one to combine relevant teachings of the references. See In re Sernaker, 217 U.S.P.Q. 1,5 (Fed. Cir. 1983)). The prior art must suggest the desirability of the combination, *and* the result must not be unexpected. See also In re Dow Chemical Co., 837 F2d 469 (Fed. Cir. 1988) ("Both the suggestion and the expectation of success must be found in the prior art, not in the applicant's disclosure").

It is also established case law that the real issue is whether the prior art suggests the overall elements of the claim as opposed to merely disclosing or suggesting individual features. (Interconnect Planning Corp. v. Feil, 774 F2d 1132, 1141-1142, 227 U.S.P.Q. 543 (Fed. Cir. 1985)).

The entire content and context of the Masuzaki et al. reference is inconsistent with any logical connection to the field of endeavor to which the invention relates, and, as objectively considered, could not be combined to arrive at the present invention unless guided by impermissible hindsight or otherwise through application of the impermissible "obvious to try" standard.

Accordingly, Applicant respectfully submits that one of ordinary skill of the art would not have found the invention obvious in view of any of the alleged combinations of the cited references. Applicant further respectfully submits that claims 33 - 39 likewise remain patentably distinct from the prior art.

Secondary Indicia Of Non-Obviousness

As additional evidence in support of Applicant's position against obviousness, Applicant respectfully submits the following evidence of long felt need, unexpected results and ready acceptance by the trade.

Long-Felt Need

For decades there has been a long-felt need for improvements in methods of joining plastic pipe, such as those using a liquid solvent weld cement represented by the King, Sr. patent, the Smrt et al. patent, and the Meyers patent. The solvent weld cements to date have been exclusively liquid and, although improvements have been made, they continue to have several problems: (1) the spillage of the liquid solvent weld cements during transport and use; (2) the declining shelf life of liquid solvent weld cements once exposed to air; (3) the relatively short "leave time" (i.e., the time between the application of the liquid solvent weld cement to the pipe to be joined and the time when the pipe must be attached before the liquid solvent weld cement begins to cure); (4) the relatively long "set-up time" (i.e., the time between the joining of the pipe portions and the time when the liquid solvent weld cement has sufficiently cured to permanently attach the pipe portions so that they may be subjected to stress without danger of loosening the

joint formed); and (5) in most applications, the need for a cleaner or primer to prepare the surface of the pipe to be joined for the liquid solvent weld cement requires two containers, increasing transport and storage costs, and two steps reducing efficiency. Other problems associated with liquid solvent weld cements included: (1) the need to use two hands to hold the liquid cement canister and the solvent weld applicator (typically a brush); (2) the waste and mess associated with application of a liquid solvent weld cement; (3) the gelling of the liquid solvent weld cement upon exposure to low temperatures and/or air; and (4) a shelf life of the liquid solvent weld cement typically on the order of only about 18 months. See DECLARATION OF RONALD D. GREEN UNDER 37 C.F.R. § 1.132 IN SUPPORT OF PATENTABILITY (the "Green Declaration"), Paragraph 3.

Failure of Others

Although there have been improvements to liquid solvent weld cements, the problems associated with the use of liquid solvent weld cements to join plastic pipe, referred to above have remained essentially unsolved. See the Green Declaration, Paragraph 4.

As an example of this failure, one of the most well established companies selling liquid solvent weld cements, and typical of those in the industry, fails to offer anything but a wide variety of liquid solvent weld cements for joining plastic pipe. This clearly shows that, in the field to which the invention pertains, the industry has steadfastly used exclusively liquid solvent weld cements. See the Green Declaration, Paragraph 4.

Unexpected Results

Applicant has observed unexpected results occasioned through use of the claimed methods.

Pipe joints made through the present inventive method resulted in joints of unexpectedly greater strength than those formed using methods involving liquid SWCs, as measured in terms of both lap shear strength and hydrostatic burst strength. Joints prepared by methods of the present invention typically evidenced unexpectedly greater average and maximum lap shear strength, and gave unexpectedly increased hydrostatic burst strength, more than twice the minimum ASTM standard, (the level at or near which liquid solvent weld cements typically perform). See Green Declaration, Paragraphs 6 and 7.

Furthermore, as compared to methods of joining plastic pipe using liquid SWCs, the use of a method involving an SWC applied in aerosol form gave unexpectedly greater "leave times" and unexpectedly shorter "set up times." See Green Declaration, Paragraphs 8 and 9.

These times are important to the workablity and efficiency of methods of joining plastic pipe. It was also found generally that a method involving an SWC applied in aerosol form unexpectedly allowed for the formation of a workable pipe joint without the prior application of a primer as is typically done in methods of the prior art. See Green Declaration, Paragraph 10.

Ready Acceptance by the Trade

The methods of the present invention have been readily and very positively accepted by those working in the trade. Applicant has received glittering reviews of the claimed method from mechanical contractors and pipe, valve and fitting (P,V & F) distributors who have tested the claimed method or have seen it tested. See Green Declaration, Paragraph 11.

Conclusion

In view of the foregoing Amendment and accompanying Remarks, Applicant respectfully submits that the present application is in condition for allowance and may be passed to issuance upon payment of the appropriate fees. Telephone inquiry to the undersigned attorney in order to clarify or otherwise expedite prosecution of the present application is encouraged.

Respectfully submitted,

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Dated: September 17, 1998 By: _____

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